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J. D. DUNSHEE, M.D., Director

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Vol. XIV, No. 21 June 22, 1935 GUY P. JONES EDITOR

The Black Widow Spider

The black widow spider, which has been publicized so widely in California during recent years, is made the subject of a bulletin which has just been issued by the Agricultural Experiment Station of the College of Agriculture of the University of California. Its authors are W. B. Herms, S. F. Bailey, and Barbara McIvor. The bulletin represents a careful study of this arachnid and includes references to all available literature upon the subject. Complete information is given relative to its distribution, natural habitat, description, preying habits, mating habits, life history, longevity, venom apparatus, and nature of the venom. The bulletin also contains reports of laboratory experiments. It is interesting to note that some difficulty was experienced in encouraging spiders to bite laboratory animals. In this connection, the authors state: "The fallacious idea prevails that the black widow is a vicious spider which will pounce upon one's person and inflict a bite without cause. The black widow is a shy spider and seeks dark places where it is less apt to be disturbed. Because of this characteristic, it was difficult to induce a bite on the animals used in the laboratory. Some individuals will bite more readily than others and these remain so no matter how often they are used. The period of starvation before using a specimen to inflict a bite has little influence on the readiness to bite."

Following are extracts from the bulletin pertaining to the effect of the bite on man, treatment and control:

EFFECT OF BITE ON MAN

"The chain of symptoms resulting from the bite of the black widow spider is so striking that once recognized there is little danger of confusing it with other venomous forms or an acute surgical abdominal condition.

"Cases of arachnidism, or spider-bite poisoning, have been incorrectly diagnosed by those unfamiliar with the symptoms as a ruptured ulcer, acute appendicitis, renal colic, tabetic crises, tetanus, and food poisoning.

"Abdominal incisions and post-mortems have revealed the intestine to be contracted nearly to the size of a lead pencil, resulting in a paralytic ileus.

"The bite itself (similar to a pin prick) is not always felt and often there is but little evidence of a lesion. However, a slight local swelling and two tiny red spots may occur, and local redness is usually in evidence at the point of attack.

"Pain, usually in the region of the bite, is felt almost immediately and increases in intensity, reaching its maximum in 1 to 3 hours and generally continuing for 12 to 48 hours, gradually subsiding. A rigidity and spasm of the larger muscle groups of the body (particularly the abdomen) are most notable. The abdominal muscles become board-like but local tenderness as in appendicitis is most always absent.

There is a slight rise in body temperature, increased blood pressure, and also, as Bogen (1932) reports, a definite leucocytosis, that is, an increase of number of leucocytes in the blood, and usually an increase in the pressure of the spinal fluid. A profuse perspiration is evident and often a tendency to nausea.

''The degree with which such symptoms are present varies in individual cases, and other symptoms such as chills, urinary retention, constipation, hyperactive reflexes, priapism, and a burning sensation of the skin are frequently reported.

CLINICAL CASE RECORDS

''Data have been compiled from 37 case records of arachnidism during the last ten years at the Woodland (California) clinic. Of the total number of cases, about one-half were bitten on the genitalia while using an open privy. Four of the cases were female patients and the remainder males, the majority of which were laborers and farmers between the ages of twenty and fifty.

''Five school children were among those treated. The temperature and pulse of the patients were usually slightly above normal, and the respiration normal. Morphine sulfate ($\frac{1}{4}$ grain) was employed in 25 cases and other drugs such as codeine, amidopyrine, atropine, etc., in the remainder.

''There was no correlation between the time of the day and the bites. The spider was seen in 11 cases. None of the patients reported any after effects on the follow-up inquiry by the attending physician.

''Only two deaths were reported in these records, one (6–25–24) a male of seventy-eight years with heart and syphilitic complications and the other (7–13–25) also a male (an itinerant) of forty-four years who died four days after being bitten. Postmortem examination of the latter case showed a ballooned intestine and the patient was recorded as dying of a paralytic ileus resulting from a black widow spider bite.

''An examination of the record shows the greatest number of bites during June, July, and August, although cases were admitted to the hospital (Woodland clinic) every month in the year except December, January, and March.

TREATMENT

''When bitten by a black widow spider, the patient should be treated with local antiseptics, such as tincture of iodine, at the point of injury to prevent secondary infection, kept as quiet as possible and a physician summoned at once.

''Contrary to the popular belief that the treatment should be the same as for rattlesnake bite, cauterization, the use of a tourniquet, etc., are not recommended by the best medical authorities. Since among other properties, the venom appears to be neurotoxic and its effect little short of instantaneous, such first-aid measures are of little value.

''Professional treatment for the bite of the black widow spider consists mainly in the use of opiates, hydrotherapy, and similar measures to alleviate the acute pain. Medical records show according to Bogen (1926–1932) a list of more than seventy-five different remedies and of all these, three seem to be outstanding as palliatives: namely, spinal puncture, intravenous injections of magnesium sulfate (10 cubic centimeters of a 2 per cent solution—see Bogen, 1932, and De Asis, 1934), and intramuscular administration of convalescent serum when given within 8 hours. However, until more evidence on controlled cases is at hand, the question as to which method is the best remains an open one. Also, individual cases vary greatly and exhibit much inconsistency in their response to treatment.

''As Bogen (1932) states, in part '* * * despite its severe symptoms, arachnidism is, in the majority of cases, a self-limited condition, and generally clears up spontaneously within a few days.'

CONTROL

''In localities experiencing mild winters the black widow spider population increases steadily, particularly because of the tropical and subtropical nature of the species. Where the winters are long and cold few black widow spiders are able to overwinter, and the population in these areas remains more or less stable. As stated previously this spider is found in sheltered situations in and about man made structures or in similarly protected places in the field. The black widow is frequently found in garages, basements, in living quarters, in old outbuildings particularly privies, old barns, stables, and woodpiles. Workers in dried fruit industries find numerous black widow spiders under the drying trays when turning the trays. In the open the spiders inhabit vacant lots and hillsides, building their webs in crevices of rocks, between adjacent rocks, under logs, under projecting banks, in deserted squirrel or rabbit holes, under low wooden or concrete bridges, culverts, etc.

''Owing to the wide distribution, solitary habits, and varied habitat of the black widow spider, great difficulty is experienced in control. It is necessary to determine at what stage in development control can be most effectively applied.

''Since the egg sacs are conspicuous and are not carried about by the spider, they may be readily collected and destroyed. Great care should be exercised when collecting egg sacs because the female spider guards the sac closely and is particularly pugnacious at that time.

"The public should be encouraged to collect and burn or otherwise destroy the egg sacs of the black widow spider. Where accessible the adult spider can be brushed from its web with a broom or stick and stamped upon, or a suitable insect spray may be used to cause the spider to fall to the floor where it should be crushed.

"The spider will almost always recover from the effects of a fly spray; hence it should be crushed or otherwise destroyed. The use of a blow torch when no hazard is involved is effective in the destruction of eggs and adult spiders as well. Because of the danger from spider bite when using privies in rural sections, it is suggested that the undersides of the seats and corners of the box be painted with creosote or crude oil.

"The adult female black widow spider is extremely difficult to kill with any contact spray. The common fly sprays act for the most part as moderate repellents and at best only render the spider temporarily paralyzed. Of such chemical tested as carbon tetrachloride, carbon bisulfide, and a combination of ethylene dichloride and carbon tetrachloride, the first appears the most effective and paralyzes the spider almost immediately. However, in a few hours normal activity returns. A 1 per cent solution of nicotine sulfate in water will usually kill the spider if thoroughly drenched with the spray, but this is not always possible because of the spider's habit of withdrawing into protected quarters when disturbed.

"Pyrethrum-oil spray used at full strength has no immediate effect but gradually the spider becomes paralyzed and will often remain so for several days, eventually recovering in most cases.

"Creosote, used as a spray has proved to be the most effective material yet employed, and if the spider is contacted, death has resulted in every case observed.

"In addition to killing the spider, the creosote acts as a repellent. The immature spiders are much more readily killed than the adults and most of the above-mentioned chemicals are usually effective. Dusts are not considered so satisfactory as sprays.

"The control of the black widow spider by the use of its parasites or predators (biological control) can be regarded at present as only a remote possibility, largely because of the isolation of individuals and widespread distribution of the species and particularly because of difficulties in mass production of the parasites.

(Continued in next issue)

THE PLAGUE SITUATION

(Continued from last issue)

The third query—Is plague in California a menace to other states?—I would answer by saying, yes, for the following reasons: (a) Because of the possibility of direct extension of the disease in the wild rodent population across state lines. We have recently discovered plague among the ground squirrels of Modoc County, 400 miles from the nearest previously known plague area and close to the state lines of both Oregon and Nevada. For all we know it has already crossed over into both states. (b) It may travel by transference to the rats in some borderline urban area, the rats traveling, as is their wont, in freight cars or ships to new and distant localities. (c) The last reason to be mentioned necessitates a return to the epidemiology of pneumonic plague. Teague and Barber, as a result of their investigations in Manchuria, believed that the essential conditions for a rapid spread of pneumonic plague are a low temperature with considerable humidity, thus permitting droplets containing plague bacilli to remain suspended in the air a longer time and at the same time preserving them against the destructive influence of warmth and drying. They point out that the greatest pneumonic epidemic of modern times occurred in Manchuria in the winter of 1910-1911 when the temperature was many degrees centigrade below zero; also that in India only 2 to 5 per cent of the cases are pneumonic and no large pneumonic outbreaks have occurred there except one with 1400 deaths in Kashmir at an elevation of about 5000 feet and in very cold weather. If we accept the plausibility of Teague and Barber's thesis we must admit the possibility of some person during the incubation period of plague traveling east in the winter time. Should this traveler develop an axillary or cervical bubo with a secondary pneumonia, the stage will be set for a rapid man-to-man transfer of a form of the disease that has no rival in the rapidity of its spread and the certainty of a fatal outcome.

SUTTER COUNTY HAS NEW HEALTH OFFICER

Dr. Francis P. Wisner at Marysville has been appointed health officer of Sutter County to succeed Dr. T. P. Peery.

NEW HEALTH OFFICER AT SANTA BARBARA

Dr. W. H. Eaton who has served as city health officer of Santa Barbara for a long period of years has been succeeded by Dr. C. T. Roome.

Better keep yourself clean and bright; you are the window through which you must see the world.

MORBIDITY

Complete Reports for Following Diseases for Week Ending June 15, 1935

Chickenpox

791 cases: Alameda County 3, Alameda 23, Berkeley 65, Oakland 70, Butte County 2, Colusa County 1, Placerville 1, Fresno County 5, Fresno 7, Bakersfield 1, Los Angeles County 47, Arcadia 1, Avalon 2, Azusa 1, Beverly Hills 17, Claremont 1, Compton 4, Culver City 16, Glendale 31, Huntington Park 2, Inglewood 1, Long Beach 15, Los Angeles 129, Montebello 1, Pasadena 23, Pomona 6, Santa Monica 7, Sierra Madre 2, South Pasadena 1, Whittier 1, Torrance 2, Lynwood 3, South Gate 6, Monterey Park 1, Bell 5, Marin County 4, Mill Valley 1,, Orange County 9, Anaheim 1, Santa Ana 12, Laguna Beach 1, Riverside County 1, Riverside 2, Sacramento County 2, Sacramento 18, San Benito County 1, San Bernardino County 1, Colton 1, Ontario 1, San Bernardino 1, San Diego County 4, Chula Vista 1, Coronado 2, San Deigo 28, San Francisco 103, San Joaquin County 12, Stockton 30, Tracy 2, San Luis Obispo County 1, San Mateo County 1, Burlingame 4, Santa Barbara County 1, Santa Barbara 15, Santa Clara County 3, Palo Alto 8, San Jose 6, Sunnyvale 3, Willow Glen 1, Santa Cruz 3, Stanislaus County 1, Yuba City 1, Woodland 2.

Diphtheria

30 cases: Oakland 4, Fresno County 2, Imperial County 1, El Centro 1, Holtville 1, Los Angeles County 1, Long Beach 1, Los Angeles 10, Manhattan 1, Redondo 2, Torrance 1, South Gate 1, San Bernardino 1, San Diego 1, San Francisco 1, Santa Clara County 1.

German Measles

614 cases: Alameda County 9, Alameda 1, Berkeley 5, Oakland 77, Martinez 5, Fresno County 16, Los Angeles County 54, Alhambra 4, Azusa 2, Burbank 1, Compton 5, Glendale 1, Huntington Park 5, Inglewood 3, La Verne 1, Long Beach 6, Los Angeles 62, Pasadena 20, Pomona 4, San Fernando 1, San Marino 2, South Pasadena 2, Whittier 2, Torrance 9, Lynwood 2, Hawthorne 2, South Gate 5, Monterey Park 2, Maywood 1, San Rafael 1, Merced County 1, Los Banos 1, King City 1, Calistoga 2, Orange County 5, Anaheim 2, Fullerton 2, Santa Ana 18, Placentia 2, Riverside 3, Sacramento 36, Redlands 1, San Diego County 9, Chula Vista 20, National City 1, San Diego 34, San Francisco 81, San Joaquin County 2, Stockton 13, Burlingame 1, Redwood City 1, San Mateo 1, Lompoc 1, Santa Clara County 7, Mountain View 5, Palo Alto 5, San Jose 41, Sunnyvale 1, Willow Glen 1, Shasta County 2, Redding 1, Siskiyou County 1, Tehama County 1, Woodland 1.

Influenza

34 cases: Berkeley 1, Lake County 1, Los Angeles County 3, Glendale 2, Los Angeles 18, Pasadena 1, Merced County 1, Orange County 1, Fullerton 2, Colfax 4.

Measles

1227 cases: Alameda County 1, Berkeley 27, Oakland 41, Sutter Creek 7, Butte County 2, Chico 4, Colusa County 1, Contra Costa County 5, Concord 1, Pinole 1, Pittsburg 4, Walnut Creek 1, Fresno County 13, Fresno 18, Kern County 3, Bakersfield 6, Kings County 7, Lake County 2, Los Angeles County 33, Beverly Hills 7, Burbank 10, Covina 1, Culver City 2, Glendale 8, Inglewood 2, Long Beach 154, Los Angeles 57, Monrovia 1, Pasadena 12, Pomona 6, Whittier 1, Lynwood 13, Hawthorne 1, Signal Hill 3, Gardena 1, Madera County 1, Madera 3, San Rafael 1, Mariposa 5, Merced County 14, Gustine 2, Los Banos 5, Modoc County 26, Monterey County 19, Salinas 1, Orange County 58, Anaheim 2, Fullerton 7, Newport Beach 8, Santa Ana 99, Laguna Beach 2, Placentia 4, Tustin 14, Beaumont 6, Riverside 10, Sacramento County 8, Sacramento 81, San Bernardino County 1, Colton 2, Ontario 5, Oceanside 1, San Deigo 4, San Francisco 103, San Joaquin County 41, Lodi 16, Stockton 4, San Luis Obispo County 1, San Mateo County 1, Burlingame 1, Redwood City 1, San Mateo 1, Santa Barbara County 1, Lompoc 4, Santa Barbara 1, Santa Clara County 24, Gilroy 1, Mountain View 10, Palo Alto 1, San Jose 91, Willow Glen 2, Santa Cruz 1, Watsonville 5, Yreka 3, Dixon 10, Stanislaus County 32, Oakdale 7, Tehama County 1, Red Bluff 1, Tulare County 1, Lindsay 1, Tulare 7, Tuolumne County 1, Ventura County 2, Santa Paula 1, Yolo County 5.

Mumps

257 cases: Alameda County 5, Alameda 19, Berkeley 6, Hayward 2, Oakland 60, Sutter Creek 1, Contra Costa County 1, Fresno County 1, Los Angeles County 12, Azusa 4, Burbank 10, Culver City 1, Long Beach 1, Los Angeles 8, Pasadena 1, Pomona 1, Mariposa County 8, Merced County 5, Merced 1, Grass Valley 1, Orange County 3, Laguna Beach 1, Placentia 3, Beaumont 2, Sacramento 16, Redlands 1, Chula Vista 3, San Diego 2, San Francisco 8, San Joaquin County 15, Lodi 6, Stockton 18, Tracy 1, San Luis Obispo County 3, San Luis Obispo 6, Santa Maria 6, Santa Clara County 1, Gilroy 4, San Jose 6, Tulare County 4.

Pneumonia (Lobar)

24 cases: Oakland 1, Butte County 1, Fresno 1, Los Angeles County 5, Avalon 1, Long Beach 2, Los Angeles 7, Pasadena 1, Grass Valley 1, Anaheim 1, Newport Beach 1, Orange 1, Sacramento 1.

Scarlet Fever

192 cases: Alameda 1, Berkeley 2, Oakland 11, Butte County 2, Chico 1, Ferndale 1, Fresno County 2, Fresno 1, Imperial County 1, El Centro 2, Bakersfield 3, Kings County 4, Los Angeles County 10, Alhambra 2, Glendale 2, Los Angeles 33, Pasadena 2, Pomona 1, San Gabriel 1, Santa Monica 2, South Gate 1, Merced County 1, Los Banos 2, Merced 2, Salinas 6, Colfax 1, Riverside County 1, Riverside 1, Sacramento County 9, Sacramento 16, San Bernardino County 1, Colton 2, Ontario 1, Redlands 1, San Diego County 3, San Diego 2, San Francisco 18, San Joaquin County 17, Lodi 1, Stockton 2, San Mateo 1, Santa Barbara 1, Palo Alto 1, San Jose 7, Siskiyou County 1, Yreka 2, Sutter County 1, Yuba City 1, Tuolumne County 1, Sonora 1, Ventura County 1, Yolo County 2.

Smallpox

10 cases: Los Angeles County 4, Los Angeles 3, San Jose 1, Watsonville 1, Tulare County 1.

Typhoid Fever

11 cases: Imperial County 2, Los Angeles 2, Merced 1, Napa County 1, Orange County 1, San Francisco 1, Modesto 1, Tulare County 1, California 1.*

Whooping Cough

173 cases: Alameda County 2, Berkeley 7, Oakland 16, Reedley 1, Bakersfield 1, Los Angeles County 11, Burbank 5, Glendale 1, Long Beach 4, Los Angeles 17, Monrovia 1, Pomona 1, Redondo 2, Santa Monica 1, Torrance 4, South Gate 3, Monterey County 3, Orange County 1, Anaheim 1, Fullerton 2, Santa Ana 6, Chula Vista 2, National City 13, San Diego 5, San Francisco 21, San Joaquin County 4, Stockton 3, San Luis Obispo County 2, Paso Robles 4, Daly City 1, San Bruno 4, Santa Barbara County 9, Santa Barbara 4, Santa Clara County 5, Gilroy 1, Palo Alto 4, San Jose 1.

Meningitis (Epidemic)

3 cases: Long Beach 1, Sacramento 1, San Francisco 1.

Leprosy

One case: from Arizona, reported by Los Angeles city.

Pellagra

2 cases: Oakland 1, San Francisco 1.

Poliomyelitis

Bakersfield 1, Kings County 1, Los Angeles 16, San Francisco 1, Santa Clara County 1.

Tetanus

One case: Madera County.

Rocky Mountain Spotted Fever

2 cases: Modoc County 1, California 1.*

Trichinosis

One case: Redwood City.

Food Poisoning

9 cases: Los Angeles 5, Tehama County 4.

Undulant Fever

One case: San Francisco.

Actinomycosis

One case: Los Angeles.

Septic Sore Throat (Epidemic)

37 cases: Lake County 2, Los Angeles County 1, Colfax 33, Santa Barbara 1.

Rabies (Animal)

36 cases: Imperial County 1, Los Angeles County 3, Los Angeles 6, Monrovia 1, South Pasadena 1, South Gate 1, Monterey Park 1, San Benito County 17, San Joaquin County 1, Stockton 4.

* Cases charged to "California" represent patients ill before entering the state or those who contracted their illness traveling about the state throughout the incubation period of the disease. These cases are not chargeable to any one locality.

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